Intracardiac Visualization of Transcatheter Mitral Valve Repair in an In Vitro Passive Beating Heart

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Transcatheter mitral valve repair has emerged as a feasible and safe alternative in patients with contraindications for surgery or high operative risk.1 Cardiac imaging plays a central role in selecting patients, guiding the procedure, and evaluating the durability of the repair at follow-up.

Real-time 3-dimensional transesophageal echocardiography is a key point to visualize and optimize transcatheter mitral valve repair for a good result. However, the chance to clarify, step by step, mitral repair with intracardiac visualization expands the knowledge of the procedure itself.

We video-recorded atrial and ventricular views of MitraClip (Abbot Vascular, USA) implant procedures in a platform with swine passive beating hearts.2,3 The procedures were performed in a physiological mitral valve and in a type II mitral regurgitation model.

Movie I in the online-only Data Supplement shows intracardiac visualization of the implant in physiological conditions highlighting the different steps of clip positioning and the interaction with the surrounding heart structures.

Movie II in the online-only Data Supplement shows intracardiac visualization of the implant for treatment of P2 mitral flail; this video outlines the grasping of the flail and the resulting double-orifice mitral valve.

Echocardiographic images and cardiac output recorded during the procedure (representative snapshots are reported in the Figure) allowed us to assess the anatomic and functional result of the procedure.

The possibility to directly view the mitral valve repair procedure gives the clinician a novel awareness of each step of the implantation, and it provides a direct feedback on the interaction of the device with the surrounding structures.

These direct views, together with the possibility to simultaneously record standard imaging techniques and to evaluate the effects of the procedure on the hemodynamic parameters, make the in vitro platform a promising tool for educational and training purposes.

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Disclosures

None.

References


Figure. Mitral double orifice after transcatheter edge-to-edge repair. Direct left atrium (A) and left ventricle (B) views and corresponding 3-dimensional echographic image (C).
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/content/133/10/e434.full.pdf

Data Supplement (unedited) at:
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In the article by Gelpi et al, “Intracardiac Visualization of Transcatheter Mitral Valve Repair in an In Vitro Passive Beating Heart,” which published in the September 1, 2015, issue of the journal (Circulation. 2015;132:e131-e132), an author’s name was incorrect. The sixth author’s name should have read Gianfranco Beniamino Fiore.

This correction has been made to the current online version of the article, which is available at http://circ.ahajournals.org/content/132/9/e131.full.
Movie Legend

**Movie 1.** Intracardiac visualization of the implant in physiologic conditions. Recommended application: VLC.

**Movie 2.** Intracardiac visualization of the implant for treatment of P2 mitral flail. Recommended application: VLC.